

R E M A R K S

Claim 5 was amended to include features of claim 4, features shown in Figs. 11 and 12 and features disclosed on page 11, line 12 to page 17, line 17 of the specification ("third embodiment").

Claims 8, 11, 12 and 16 were amended to include features shown in Figs. 11 and 12 and features disclosed on page 11, line 12 to page 17, line 17 of the specification ("third embodiment").

Editorial revisions were made to claims 6, 7, 9, 10, 13 to 15 and 17 to 20.

Withdrawn claim 21 was canceled. Applicants reserve the right to file a Divisional application under 35 USC 121 directed to claim 21.

New claims 22 to 29 are supported by Figs. 11 and 12 and by the specification on page 11, line 12 to page 17, line 17 ("third embodiment").

Claims 1 and 18 were rejected under 35 USC 102 as anticipated by or, in the alternative, under 35 USC 103 as being obvious over EP 1 359 230 to Hino et al. for the reasons set forth on pages 3 to 4 of the Office Action.

Claims 2 to 17 and 19 to 20 were rejected under 35 USC 103 as being obvious over EP 1 359 230 for the reasons set forth on pages 4 to 8 of the Office Action.

The prior art rejections are traversed on the ground that EP 1 359 230 is not a reference against the present application under 35 USC 102(b) or under 35 USC 103(a). EP 1 359 230 was published November 5, 2003. The present application is the United States national phase application of PCT/JP2003/009959 filed August 5, 2003. The international filing date (August 5, 2003) becomes the United States filing date for purposes of predating prior art (see MPEP 1893.03(b)).

Applicants' present claims are also patentable over EP 1 359 230 for the following reasons.

EP 1 359 230 pertains to a method of manufacturing a steel plate wherein a steel plate is intermittently heated at least two times to a target temperature wherein a steel plate passes through a plurality of induction heating apparatuses for intermittent heating while avoiding overheating of the steel plate surface.

In contrast to EP 1 359 230, applicants' present claims are directed to methods for establishing a control system in a case

wherein a heat treatment system which utilizes induction heating apparatuses are installed on a production line.

Time, speed and electric power requirements in heating treatments differ when a steel product is passed through one or more induction heating apparatuses, depending on not only the size of a steel product and the necessary magnitude of a temperature increase, but also on the number of the plurality of induction heating apparatuses and the steel plate passing time. Therefore, in conducting an actual operation, a number of times of passage, passing speed and electric power requirements, depending on the size of a steel product, target temperature and so forth, are necessary to be determined.

EP 1 359 230 does not teach or suggest the "third embodiment" of the present invention as set forth in applicants' present claims and as disclosed in the present specification on page 11, line 12 to page 17 line 17; on page 31, line 6 to page 37, line 12; and in Figs. 11 to 13, such as a method of heat treatment of a steel plate within the shortest period of time, a method of heat treatment of a steel plate within a target time and a method of heat treatment of a steel plate to minimize electric power consumption.

Applicants' present claims represent an improvement over EP 1 359 230. For example, as disclosed in "sixth embodiment" in the present specification, on page 18, line 9 to page 23, line 16 and by applicants' Figs. 3A to 3C, Fig. 4 and Fig. 5, it is understood that by heating by passing a steel product three times through three induction heating apparatuses, while controlling the speed at every passing time, the heat treatment time can be made shorter and electric power consumption can be reduced rather than heating by passing a steel product one time only through six induction heating apparatuses or heating by passing a steel product one time only through three induction heating apparatuses. Further, when the number of induction heating apparatuses is reduced, the capital investment is reduced.

In Fig. 4 and Fig. 5 in the present application, there is shown an advantageous number of passages for each of time and electric power, depending on the steel product thickness, length and target heating. The heat treatment time is shorter by passing the steel product a plurality of times through the induction heating apparatuses when the steel product thickness is large, but when the steel product thickness is small, one passage for heating is advantageous in some cases.

Applicants' present claims provide methods of determining speed and electric power at every passage and selecting the most suitable passing time based on the heat treatment time and electric power consumption. Such methods are not taught or suggested by EP 1 359 230.

Withdrawal of each of the prior art rejections is thus respectfully requested.

Claims 1 to 20 were rejected on the grounds of nonstatutory obviousness-type double patenting over claims 30 to 43 of USP 6,891,139 for the reasons set forth on page 9 of the Office Action.

A TERMINAL DISCLAIMER which identifies USP 6,891,139 is being filed concomitantly herewith.


Withdrawal of the double patenting rejection is thus respectfully requested.

Reconsideration is requested. Allowance is solicited.

Enclosed is a Form PTO-2038 in the amount of \$350 in payment of seven additional total claims.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the number given below for prompt action.

Respectfully submitted,



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Encs.: (1) PETITION FOR EXTENSION OF TIME
(2) TERMINAL DISCLAIMER & Form PTO-2038 for \$130
(3) Form PTO-2038 for \$350 (additional claims fee)